

Title (en)

LENS HOLDER TO COMPENSATE FOR OPTICAL FOCAL SHIFT BY THERMO-MECHANICAL EXPANSION

Title (de)

LINSENHALTER ZUR KOMPENSATION DER OPTISCHEN FOKUSVERSCHIEBUNG DURCH THERMOMECHANISCHE EXPANSION

Title (fr)

SUPPORT DE LENTILLE POUR COMPENSER UN DÉCALAGE DE FOCAL OPTIQUE PAR EXPANSION THERMOMÉCANIQUE

Publication

EP 3715929 A1 20200930 (EN)

Application

EP 20166423 A 20200327

Priority

- US 201962826673 P 20190329
- US 202016830117 A 20200325

Abstract (en)

A camera module includes a lens assembly, a lens holder, and an image sensor assembly. The lens assembly includes a lens barrel and multiple lens elements embedded within the lens barrel. A change of temperature causes an optical focal shift that is determined according to an optical thermal shift rate associated with an optical design of the lens assembly. The lens holder has a lens holder CTE to compensate for the optical focal shift by thermo-mechanical expansion. The change of temperature causes a length expansion of the lens holder determined at least in part according to the lens holder CTE. The image sensor assembly includes an image sensor and a substrate coupled to the image sensor, the image sensor to capture light passing through the multiple lens elements and convert the captured light into image signals. The lens holder is attached to the lens barrel and the substrate using adhesives.

IPC 8 full level

G02B 7/00 (2006.01); **G02B 7/02** (2006.01); **H04N 5/217** (2011.01); **H04N 5/225** (2006.01)

CPC (source: CN EP US)

G02B 7/008 (2013.01 - EP US); **G02B 7/021** (2013.01 - US); **G02B 7/025** (2013.01 - US); **G02B 7/028** (2013.01 - EP US); **G03B 17/06** (2013.01 - US); **G03B 17/08** (2013.01 - US); **G03B 17/12** (2013.01 - US); **H04N 23/54** (2023.01 - CN); **H04N 23/55** (2023.01 - CN EP US); **H04N 23/57** (2023.01 - CN EP US)

Citation (applicant)

US 201962826673 P 20190329

Citation (search report)

- [X] US 2018176451 A1 20180621 - ASUNCION BRYAN C [US]
- [X] US 2017045708 A1 20170216 - CAMPBELL SCOTT PATRICK [US]
- [X] US 2017059807 A1 20170302 - FENG CHEN [US]

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3715929 A1 20200930; CN 111756966 A 20201009; CN 111756966 B 20220614; CN 114885083 A 20220809; JP 2020166270 A 20201008; JP 6999728 B2 20220119; US 2020310227 A1 20201001

DOCDB simple family (application)

EP 20166423 A 20200327; CN 202010229121 A 20200327; CN 202210607990 A 20200327; JP 2020059850 A 20200330; US 202016830117 A 20200325